

The white substance of the Crayfish secretes in a manner analogous to that of the bladder; its cells are similarly swollen at their extremity into large clear vesicles, distinct from the body of the cell. As regards the cortical substance of the Crayfish, and the labyrinth of the other Crustacea, several vesicles exist at once in the same cell: they are, in general, tolerably numerous, oblong, and ranged regularly side by side: they then present the appearance of a sort of palisade, covering the cells, and the elements of which correspond pretty exactly to the striation of the bodies of the cells. The saccule equally secretes, by separating cellular portions, which are expelled in the shape of vesicles frequently coloured yellow.—*Comptes Rendus*, tome cxiii. no. 4 (July 27, 1891), pp. 223-225.

*On the Circulatory and Respiratory Apparatus of certain
Arthropods.* By M. A. SCHNEIDER.

AMPHIPODS.—I have injected *Talitrus*, the ordinary fresh-water Shrimp, and *Niphargus*. In all I found that the heart emits three pairs of lateral arteries, of which the first two arise immediately below the second and third pairs of cardiac ostia, while the third is given off pretty nearly in the middle of the space which separates the third pair of cardiac ostia from the origin of the posterior aorta. These lateral arteries give rise to numerous ramifications, which principally pass to the biliary apparatus.

Claus described lateral arteries in the *Hyperina*: to-day we are able to affirm that they exist in the whole group.

ARACHNIDA. *Scorpion*.—The vessels formerly described by Newport and Blanchard in the Scorpion have more recently been regarded as simple lacunæ. Their primitive value must, however, be retained for them.

Sections of these vessels, in particular of the spinal artery, show a distinct wall, with striated muscular fibres, which are absent, on the contrary, in the neurilemma; successful injections never show extravasations, and those which contain nitrate of silver everywhere disclose a splendid endothelium. The same results are obtained in the Araneida.

The vascular topography, as determined by my predecessors, is correct in its ensemble; but many new details have presented themselves to me, into a detailed description of which I shall not enter, but confine myself to mentioning:—(1) Five transverse anastomoses between the two halves of the annular vessel, each giving off a *sternal* artery, which plunges into the sub-œsophageal mass; (2) four other sternal arteries, which arise below the initial portion of the spinal artery, and of which the posterior becomes the artery of the pectines; (3) anastomoses in the caudal region, or post-abdomen, not such as Newport described, but between the two branches formed by the bifurcation of the sternal arteries of this region and the posterior aorta.

ARANEIDA.—I have studied the lung of Spiders and am absolutely convinced that the chitinous envelope, recently described as

surrounding this organ, does not exist, and that its description is partly due to the detachment of the cuticular substance underneath the lung, the separation of which has led to the belief in the existence of a floor or partition between the ventral surface of the body and the corresponding face of the organ in question.

The blood comes into direct contact with the leaves, entering between them by their dorsal edges, and then falls into the subpulmonary chamber, whence it can only escape by the vessel which conducts it to the pericardium, and thence to the heart.—*Comptes Rendus*, tome cxiii. no. 2 (July 13, 1891), pp. 94, 95.

On the Arterial System of Isopods. By M. A. SCHNEIDER.

Among the characters which the study of the arterial system had permitted us to assign to Isopods, was the existence of a vascular collar, anterior to the nerve-ring, giving off the subneural vessel, and furnishing in conjunction with the latter the arteries of the buccal appendages.

Nevertheless, in the Annelids, as well as in the Myriapods and Arachnids, the great aortic arch is, as in the case of the Vertebrates, situated behind the brain. Are we really confronted with an anomaly? My injections of *Porcellio* and *Ligia* enable me to reply in the negative.

Independently of the two arteries which continue the aorta in front, below the antennary arteries, running along the edge of the nervous collar, there exist, *behind this collar*, two arteries which arise from the aorta in the immediate neighbourhood of the point from which the ophthalmic artery starts. A peculiarity which distinguishes them is the loop formed by each around the base of insertion of a little ligament upon the stomach. They pass round the digestive tube, give off an anastomosing branch to the mandibular artery, and unite below the stomach and above the inferior nervous mass, thus describing a ring comparable in every respect to that of the Arachnids, and which is, manifestly, the great aortic arch of the Isopods, *dorsal* in position with reference to the nervous system. From this arch there pass, to the right and left, the arteries of the buccal appendages, with the exception of those of the mandibles, which start from a trunk common also to the antennary arteries.

Moreover, I convinced myself in the two types in question, that one or several anastomoses between the ophthalmic artery which arises behind the brain and the antennary arteries which are in front of it, unite these two trunks into a median arch or into two arches approaching the median plane, in such a way that this arch, with the aorta which subtends it, describes a *vertical* vascular ring which recalls that of the Amphipods.

Thus there fall to the ground two characters, one of which created a unique position for the Isopods from the point of view of general morphology, while the other tended to separate them profoundly from the Amphipods.—*Comptes Rendus*, tome cxiii. no. 7 (August 17, 1891), p. 316.